WHAT IS CLAIMED IS:

2   1.   A method of noise estimation in a communication device comprising:

demodulating a received signal on an empty code channel; and

4   determining a noise estimate from a resulting demodulated signal.

2   2.   The method of Claim 1, wherein the empty code channel is an empty Walsh
code channel.

2   3.   The method of Claim 1, wherein the empty code channel is a Pilot Walsh code
channel.

2   4.   The method of Claim 3, wherein demodulating the received signal comprises
demodulating quadrature phase symbols of the received Pilot signal.

2   5.   The method of Claim 1, wherein determining the noise estimate comprises
determining a magnitude of the demodulated signal.

2   6.   The method of Claim 5, wherein determining the noise estimate further
comprises accumulating the determined magnitude of the demodulated signal over a frame.

2   7.   The method of Claim 1, wherein determining the noise estimate comprises
determining an energy of the demodulated signal.

2   8.   The method of Claim 7 wherein determining the noise estimate further
comprises accumulating the determined energy of the demodulated signal over a frame.

2   9.   The method of Claim 1 wherein the communication device is a CDMA mobile
station.

10.   The method of Claim 1 wherein the communication device is a CDMA base

2   station.

11.   A method of noise estimation in a communication device comprising:

2   calculating a cross product of a received Pilot signal to generate a demodulated Pilot

signal;

4   determining an energy of the demodulated Pilot signal; and

accumulating the energy over a frame to produce a received noise estimate.

12.   The method of Claim 11, wherein calculating the cross product comprises

2   calculating a cross product of the received Pilot signal with a filtered Pilot signal.

13.   A method of noise estimation in a communication device comprising:

2   calculating a cross product of a received Pilot signal in a plurality of fingers of a rake

receiver to generate a demodulated Pilot signal in each of the plurality of fingers;

4   time aligning the demodulated signals from each of the plurality of fingers in a

corresponding plurality of deskew buffers; and

6   summing the time aligned demodulated signals from the plurality of deskew buffers

to generate a composite demodulated signal.

14.   The method of Claim 13, further comprising:

2   determining a magnitude of the composite demodulated signal; and

accumulating the magnitude of the composite demodulated signal over a frame.

15.   The method of Claim 14, wherein the communication device is a CDMA

2   mobile station.

16.   The method of Claim 13, further comprising:

2   determining an energy of the composite demodulated signal; and

accumulating the energy of the composite demodulated signal over a frame.

17. The method of Claim 16, wherein the communication device is a CDMA

2 mobile station.

18. A noise estimator in a communication device comprising:

2 means for demodulating a received signal on an empty code channel to produce a

demodulated signal; and

4 means for determining a noise estimate from the demodulated signal.

19. The noise estimator of Claim 18, wherein the empty code channel is an empty

2 Walsh code channel.

20. The noise estimator of Claim 18, wherein the empty code channel is a Pilot

2 Walsh code channel.

21. The noise estimator of Claim 20, wherein the means for demodulating the

2 received signal comprises means for demodulating quadrature phase symbols of the received

Pilot signal.

22. The noise estimator of Claim 18, wherein the means for determining the noise

2 estimate comprises means for determining a magnitude of the demodulated signal.

2 23. The noise estimator of Claim 22, wherein the means for determining the noise

estimate further comprises means for accumulating the magnitude of the demodulated signal

4 over a frame.

24. The noise estimator of Claim 18, wherein the means for determining the noise

2 estimate comprises means for determining an energy of the demodulated signal.

25. The noise estimator of Claim 24 wherein the means for determining the noise

2 estimate further comprises means for accumulating the energy of the demodulated signal

over a frame.

26. The noise estimator of Claim 18 wherein the communication device is a

2 CDMA mobile station.

27. The noise estimator of Claim 18 wherein the communication device is a

2 CDMA base station.

28. A noise estimator in a communication device comprising:

2 means for calculating a cross product of a received Pilot signal to generate a
demodulated Pilot signal;

4 means for determining an energy of the demodulated Pilot signal; and
means for accumulating the determined energy over a frame to produce a received

6 noise estimate.

29. The noise estimator of Claim 28, wherein the means for calculating the cross

2 product comprises means for calculating a cross product of the received Pilot signal with a
filtered Pilot signal.

30. A noise estimator in a communication device comprising:

2 means for calculating a cross product of a received Pilot signal in a plurality of
fingers of a rake receiver to generate a demodulated Pilot signal in each of the plurality of

4 fingers;

means for time aligning the demodulated signals from each of the plurality of fingers

6 in a corresponding plurality of deskew buffers; and

means for summing the time aligned demodulated signals from the plurality of

8 deskew buffers to generate a composite demodulated signal.

31. The noise estimator of Claim 30, further comprising:

2 means for determining a magnitude of the composite demodulated signal; and
means for accumulating the determined magnitude of the composite demodulated

4 signal over a frame to produce a received noise estimate.

32. The noise estimator of Claim 31, wherein the communication device is a

2 CDMA mobile station.

33. The noise estimator of Claim 30, further comprising:

2 means for determining an energy of the composite demodulated signal; and

means for accumulating the determined energy of the composite demodulated signal

4 over a frame to produce a received noise estimate.

34. The noise estimator of Claim 33, wherein the communication device is a

2 CDMA mobile station

35. A device for noise estimation in a communication device comprising:

2 a receiver adapted to demodulate a received signal using an empty Walsh code;

a noise calculator coupled to the receiver adapted to generate an output comprising a

4 noise estimate that is based in part on the demodulated received signal; and

an accumulator adapted to sum the output of the noise calculator over a

6 predetermined period.

36. The device of Claim 35 wherein the receiver comprises:

2 a plurality of fingers, each finger adapted to demodulate a multipath replica of a

desired signal and to provide outputs comprising finger noise components; and

4 a summer adapted to coherently sum the outputs from each of the plurality of fingers.

37. The device of Claim 36 wherein each of the plurality of fingers comprises:

2 a cross product generator adapted to calculate a cross product of signals provided at a

first input and a second input of the cross product generator to produce a cross product

4 output; and

a deskew buffer adapted to store time aligned cross product outputs from the cross

6 product generator.